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ABSTRACT

This chapter examines how integrating the study of motivation to learn with the issue of identity development during adolescence requires simultaneous attention to patterns of school functioning, peer relationships, and mental health at the level of the individual, and to patterns of developmental supports or risks at the level of the social contexts within which adolescents are developing. The chapter discusses the need for a holistic perspective and contends that it is in the overall configuration of adolescents' personal and interpersonal resources and risk factors that researchers can best identify productive and more problematic pathways of holistic functioning during the middle school period. The first part of the chapter describes several ways in which the concept of organization has been influential and has been neglected in research on motivation and education during adolescence. The second part describes how research on motivation to learn during adolescence points toward an organizational perspective in which a focus on subgroups of individuals is central. The third part of the chapter provides a conceptual architecture for studying adolescent development in the context of schools in particular. The fourth part describes a methodological approach that emphasizes person-centered data analysis, and illustrates the conceptualization with empirical results from a series of recent studies that have used person-centered analyses. The chapter concludes with a discussion of the utility of pattern-centered approaches for future research on adolescents' academic motivation. (Contains 89 references.) (KB)

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CHAPTER 12

STUDYING MOTIVATION TO LEARN DURING EARLY ADOLESCENCE: A HOLISTIC PERSPECTIVE

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The wholeness of life has, from of old, been made manifest in its parts...

—Lao Tzu

Lao Tzu, a sage reputed to have lived some 26 centuries ago in what is modern-day China, articulated an outlook on the phenomenal world that was in some ways remarkably prescient from the vantage point of science in the 21st century. He was reputed to have taught that "everything in the universe follows certain patterns and processes that escape precise definition" (McGreal, 1995, p. 9). This predisposition to see the phenomenal world in terms of probabilistic patterned processes rather than determinate discrete parts may be a feature of the Chinese way of perceiving and conceiving of reality that extends more or less from antiquity down to this very day (Nisbett, Peng, Choi, & Norenzayan, 2001). Such a worldview, one more holistic than reductionistic, more dynamic than static, is undoubtedly a powerful theoretical force at play today in the minds of scientists the world over who are concerned with understanding complex systems over time. Such systems include the evolution of the physiochemical universe and biological life on earth

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(Capra, 1982; Schneider & Londer, 1984), as well as the biological, psychological, and social development of human beings in particular times, places, and cultural settings on the earth (Sameroff, 1983).

What is striking to us and what we address in this chapter is how the central concept of this contemporary zeitgeist of the sciences, that of *organization*, has attained some prominence theoretically in developmental and educational psychology, but is still rather neglected conceptually and analytically in contemporary research on adolescents' motivation to learn, achievement, and experience in the context of middle school. Organization refers to the tendency of complex dynamic systems to show holistic functioning within and across levels of analysis in a manner in which component "parts" take on meaning and functional significance through their relationship with the whole system. This organizational tendency is referred to in the oft-quoted phrase "The whole is greater than the sum of its parts."

The concept of organization is beginning to be applied to the study of human motivation and development by various scholars (e.g., Bergman, Cairns, Nilsson, & Nystedt, 2000; Cicchetti & Cohen, 1995; D. Ford & Lerner, 1992; M. Ford, 1992). In relation to the study of motivation, an organizational perspective draws attention to the patterning of multiple psychological processes that ready and direct human action in specific activity settings. Features of activity settings, social relationships in those settings, and the identity of the individual in those settings are the "wholes" that give meaning to the component processes termed "motivation" by researchers (Ford, 1992; Goodenow, 1992).

School environments too can be conceptualized in terms of patterns of organized social, institutional, and instructional processes (Talbert & McLaughlin, 1999; Zalatimo & Sleeman, 1975). The characteristics of the community in which schools sit, district policies and the culture and resources of a particular school, the nature of academic departments, and characteristics of school leaders and teachers all represent other "wholes" that give form and meaning to the classroom settings, sets of relationships, and activities in which and through which students exhibit motivation to learn or not. Thus, the study of motivation to learn in school, from a holistic vantage point, includes a simultaneous focus on the patterning of intrapersonal psychological factors, social relationships, and extrapersonal school factors among subgroups of youth who manifest differential patterns of behavioral investment, participation, and achievement in school.

THE NEED FOR A HOLISTIC OUTLOOK

Despite the increasing appeal of systems perspectives in the sciences generally and in the developmental sciences in particular, we believe that in the main, contemporary researchers interested in early adolescents' motivation to learn and achievement behavior in middle school settings have neglected the concept of holistic organization in their work. In essence, we see this body of research as primarily one in which the parts are privileged over the whole. This privileging of the parts over the whole occurs in three ways: (a) through a limiting of investigations primarily to psychological processes and behavioral outcomes linked to the academic domain rather than to the overall organization of adolescents' psychosocial identity and behavior that includes but transcends the academic domain; (b) through a lack of theoretical integration; and (c) through a continued reliance on variable-centered analytic techniques in which the relations between variables across all persons are the focus, rather than on pattern-centered analytic techniques in which the relations among variables within subgroups of individuals are the focus (Magnusson & Bergmann, 1988). On the other hand, with respect to the study of how the school context can affect early adolescents' motivation to learn and achievement behavior during these years, we believe motivational researchers interested in early adolescence have tended to privilege the whole over the parts too much. Specifically, we mean that in many studies, including our own, researchers conceive of the middle school environment as a relatively uniform social sphere that is experienced similarly by all students in the school, with analytic strategies flowing from this implicit assumption (e.g., Roeser, Midgley, & Urdan, 1996). This stands in contrast to a view in which schools are recognized as institutions that both provide, and are experienced as providing, a differentiated set of social and academic opportunities to different subgroups of the student body (Lee, Bryk, & Smith, 1993; Oakes, Gamoran, & Page, 1992).

The purpose of this chapter is to outline why a holistic theoretical and analytic perspective on early adolescents' motivation to learn, behavior, and experience in the context of middle school, a perspective in which the concept of organization is central, can advance this field of study in the next generation of scholarship by addressing these aforementioned issues. In the first part of this chapter, we describe several ways in which the concept of organization has been influential and has been neglected in research on motivation and education during adolescence. Second, we describe how research on motivation to learn during adolescence points toward an organizational perspective in which a focus on subgroups of individuals is central. In the third part of the chapter, we describe the core concepts of an organizational, systems approach to human development and three principles derived from these concepts that we have used to

guide our own research into adolescents' lives in school contexts. In the fourth section of the chapter, we provide an illustration of how we have instantiated the core principles of systems thinking in our own research using pattern-centered analytic techniques with cross-sectional and longitudinal data. We conclude with some thoughts on the utility of pattern-centered approaches for future research on adolescents' academic motivation.

WHEN THE SUM OF THE PARTS IS LESS THAN THE WHOLE

The most basic feature of a holistic outlook on human motivation, behavior, and development is a conceptual shift from focusing on individual motivational processes, achievement behaviors, school experiences, and their interrelations across all individuals in a sample to thinking about the patterning or *organization* of multiple psychological processes, behaviors, and school experiences among different subgroups of individuals. Theoretically, researchers interested in academic motivation and achievement in school settings during adolescence have made important advances in a manner consistent with a holistic, systems worldview in which the concept of organization is central. These advances include (a) a conceptualization of young people as active agents in their own learning and development (e.g., a focus on self-organization); (b) the definition of motivation as a series of fluxional, goal-oriented cognitive and emotional states rather than as a set of fixed, mechanistic needs or personality traits (e.g., a focus on process dynamics or dynamic processes); and (c) a concern with how features of the environment, in conjunction with characteristics of individuals, co-contribute to variation in individuals' behavioral investment in or divestment from learning situations in and over time (e.g., a focus on the organization of behavior-in-context; see Boekaerts, Pintrich, & Zeidner, 2000; Eccles, Wigfield, & Schiefele, 1998; Lazarus, 1991). Despite these advances, however, we believe this work could be extended in at least four fruitful directions.

Beyond the Academic Domain

First, motivational researchers continue to be rather parochial in the kinds of psychological processes and behavioral outcomes they examine. Despite mounting evidence that indicators of psychological and behavioral competence or maladjustment, including but transcending academic motivation and achievement, "cluster" together during childhood and adolescence, educational psychologists rarely examine nonacademic outcomes in their research. For instance, many children who fail academically during elemen-

tary school not only have maladaptive academic motivational styles (e.g., Dweck, 1986), but also externalizing problems associated with impulsivity, hyperactivity, and difficulties with peers (e.g., Hinshaw, 1992) or internalizing problems associated with depression (Nolen-Hoeksema, Girgus, & Seligman, 1986). During secondary school, researchers have identified a syndrome of academic failure, relationships with peers who engage in antisocial behavior, and engagement in various problem behaviors outside of school among a considerable minority of young people (Dryfoos, 1990); and another syndrome of academic success, prosocial behavior, and abstention from problem behavior involvement among others (Ollendick, Greene, Weist, & Oswald, 1990). By broadening the focus of motivation research to include aspects of mental health, social motivation, peer relationships, and behavioral conduct in and outside of school, such research could make significant contributions to the broader study of developmental competence and psychopathology (e.g., Juvonen & Wentzel, 1996; Masten & Coatsworth, 1998).

Toward Theoretical Integration

Motivational researchers evidence a second form of parochialism in that they tend to concentrate on a subset of variables derived from a single theory rather than the network of motivational processes known to guide, direct, and energize achievement behavior that emerge from the field as a whole (see Ford, 1992, for argument). This theoretical parochialism occurs despite the empirical evidence on academic motivational processes that discloses a spectrum of cognitive and emotional processes, including goals; efficacy and competence-related beliefs; and feelings, moods, and values that contribute to "motivating" achievement behavior in school settings (Eccles et al., 1998). Calls for more intertheoretical perspectives are largely ignored (e.g., Eccles et al., 1998; Ford, 1992). Although we do not believe that researchers should haphazardly pick and choose constructs from different traditions without some particular goals in mind, we do see utility in including various constructs from different theories in the same study such that (a) variables could be assessed in terms of their statistical independence or higher order dependence; (b) variables could be compared in terms of their multivariate associations with specific educational outcomes; (c) variables could be examined in terms of their patterning within different subgroups of young people; and ultimately (d) "higher order" constructs, patterns, and theories of motivation could be forthcoming.

Toward Patterns and Pathways of Development

Another area that is underdeveloped in motivational research is the use of pattern-centered techniques in which configurations of variables within subgroups of individuals at one point in time, or over time, are the focal units of analysis. For instance, several researchers have advanced the field a great deal by showing how single indicators of academic motivation—whether in terms of competence beliefs, values, goal orientations, or intrinsic versus extrinsic motivational orientations—change over time during the transition from elementary to middle to high school (see Eccles et al., 1998, for review). What is needed now is a more focused assessment of how patterns of motivational variables change among various theoretically interesting subgroups of children and adolescents as they move through school and toward different developmental endpoints (e.g., high school graduation, school withdrawal, two-year college, four-year college; pregnancy or legal trouble; Roeser, Peck, Eccles, & Sameroff, 1999, 2000, 2001). In this way, linkages between patterns of motivation and pathways of educational achievement and attainments can be understood.

Harter (1996), for example, has examined differential patterns of changes in perceived competence and intrinsic–extrinsic motivational orientations among subgroups of students as they transition into middle school. She contends that reassessments of scholastic competence following the middle school transition precipitate changes in motivational orientations. Furthermore, she suggests that such reassessments are a function of (a) increases in the size of the student body in middle school and therefore the size of the reference group against whom youth judge their intellectual competence; and (b) increases in teachers' use of socially comparative practices. This work is exemplary in that it represents the natural evolution from variable-centered insights gained at the sample level (motivational shifts from intrinsic to extrinsic with increasing grade; Harter, 1981) to pattern-centered insights gained at the subgroup level (but only for youth who reassess their scholastic competence after a school transition and feel less competent) to causal explanations (because of new social reference groups and comparative teacher practices; Harter, 1996).

We see great utility value in this kind of research in which the focus is on the patterning of multiple motivational variables and outcomes within practically interesting or theoretically derived subgroups of youth. Furthermore, we believe that the marriage of such pattern-centered work with a focus on multiple developmental outcomes, previous histories of functioning, and social experiences including but extending beyond the academic domain and the context of school would do much to advance our understanding of the organization of behavioral competence or psychopathology. Such advances would address behavior not just within a particular domain of func-

tioning but across domains; not just within a particular developmental stage but across time; not just within the individual but in terms of individuals and their social spheres of experience. For instance, in the Harter work, we wonder if the youth who reassessed their competence after transitioning to middle school and found themselves wanting also were more likely to get involved in problem behavior in and outside of school. Did such youth have a history of educational placements that would have forecast such changes in early adolescence? What academic "tracks" were such youth in; who were their classmates, and who were their friends? Studying patterns and pathways of school functioning with a focus on subgroups and broader outcomes and contexts of human development is another area into which motivational research could extend in the future.

Into Schools

A final area in which we see opportunities for the next generation of motivation research concerns the conceptualization of the differentiated environment of the secondary school. Developmentalists have rarely studied schools as central contexts of human development Ie.g., Eccles & Roeser, 1999), and some have argued psychologists in general have never adequately addressed schools and their problems (Sarason, 2001). This is especially true in relation to secondary schools, where sociologists have conducted the most research (Eccles et al., 1998). What psychologists interested in motivation to learn have to offer in this area is a rather sophisticated set of ideas about how schools, as complex organizations characterized by multiple levels of instructional, interpersonal, and organizational processes, shape meanings, motivations, and behaviors among their inhabitants; and how at the same time different subgroups of young people, based on their academic history, race, class, and gender, develop differential orientations toward investment in school (e.g., Eccles & Roeser, 1999; Maehr & Midgley, 1991). Integrating this work with the sociological literature on how schools, through sorting mechanisms, staffing decisions, curricular offerings, and aspects of the school culture, provide different sets of experiences to different subgroups of young people (e.g., Lee et al., 1993) could advance both the psychological and sociological study of student functioning in middle and high school settings.

Summary

In sum, we believe that the next generation of scholarship on motivation to learn during adolescence could make significant advances by focusing holistically on (a) the relations between motivation and achievement in

school and aspects of identity and behavioral outcomes transcending the academic domain of functioning; (b) the common and unique insights into differential patterns of investment, participation, and achievement offered by different theoretical approaches; (c) patterns and pathways of functioning among subgroups of youth using pattern-centered analytic techniques; and (d) the ways in which secondary school environments provide and are experienced as providing different academic and social opportunities to different subgroups of youth. Early adolescence, with all of its characteristic biological, psychological, and social changes, offers a unique time in the lifecourse in which to address these important issues.

EDUCATION AND DEVELOPMENT DURING EARLY ADOLESCENCE

Research on early adolescents' motivation to learn highlights the need for greater attention conceptually and analytically to the concept of organization in order to gain a greater understanding of how and why different subgroups of youth show diverging patterns of academic engagement and success during this particular period in the lifespan. Many studies have now documented, for instance, that early adolescents' academic motivation and achievement, at the aggregate level, decline, whereas levels of school truancy, school violence, and absenteeism increase during these years (see Eccles, Lord, & Roeser, 1996; Simmons & Blyth, 1987). Furthermore, changes in academic motivation and achievement in early adolescence have been linked to longer-term developmental sequelae. Adolescents who are disengaged from school in early adolescence are much more likely to experience a host of "downstream" problems during late adolescence including curtailed educational attainments and school withdrawal, teenage pregnancy, abuse of substances, engagement in antisocial behavior, and contact with the legal system (Dryfoos, 1990; Roderick, 1993). On the other hand, adolescents who are engaged with school during these years are more likely to stay on track toward high school graduation and enrollment in college and to avoid the major problems that curtail future opportunities (Eccles et al., 1997; Roeser, Galloway, Watson, Casey-Cannon, & Keller, 2001). The question of why some adolescents do well in school and some do not during this period is complex and likely reflects a diversity of factors. Many different explanations focused on individual-developmental, and social-environmental factors have been offered to explain individual or subgroup differences in the nature of academic functioning during this period.

Theories of Why Academic Motivation Changes in Early Adolescence

Some attribute general declines in academic motivation in early adolescence to the fact that pubertal maturation, concerns with physical appearance, and concomitant interests in potential romantic partners all combine to cause a shift in motivational energies from the academic to the social domain. That is, as concern with one's physical appearance, social relationships, and one's romantic potential become more important to one's overall sense of well-being, individuals shift their focus away from school toward these consequential life domains (Harter, 1990).

Others have highlighted potential role conflicts that can arise for certain youth during the identity formation processes initiated by puberty in early adolescence. As one example, some females may be confronted with a conflict between their desire to fulfill cultural gender roles in which a woman is supposed to be romantically appealing, well-liked, cooperative, and demure, and their desires to be high achievers who are outstanding, outspoken, and competitive with others (Maccoby, 1998). Role conflicts have also been explored in relation to why disproportionate numbers of minority youth from historically targeted groups disengage from school during these years (Ogbu, 1978).

Still others have focused on the developmental roots of academic disengagement and failure in adolescence. In this work, attention is directed toward the developmental precursors of disengagement from school in adolescence in terms of childhood difficulties in addressing lifetasks associated with trust, autonomy, and academic or social competence (Erikson, 1950). The basic notion here is that adaptational failures in the earlier period set young people on psychosocial and contextual trajectories that make school failure during adolescence probabilistically more likely (Cairns, Cairns, & Neckerman, 1989; Carlson et al., 1999; Roeser, Eccles, & Freedman-Doan, 1999). A different version of this developmental orientation focuses on how early educational decisions such as grade retention or special education placements, appropriately made or not, place disproportionately high numbers of poor and minority youth on trajectories toward academic disengagement and failure during adolescence (Entwistle & Alexander, 1993).

Other theorists have focused more on the nature of the social experiences young people are going through during early adolescence to explain negative motivational and achievement patterns. For instance, Simmons and Blyth (1987) described how the sheer number of simultaneous life changes in early adolescence, including puberty, school change, entry into dating, family transitions, and so on, can tax the adaptational resources of some young people, diminish their capacity to cope with the challenges confronting them, and lead to academic problems. In their work, white females were

found to be particularly at risk for school problems due to a build-up of simultaneous life changes.

Finally, others have focused not on the number, but on the nature of the social experiential changes that occur in early adolescence. For instance, Eccles and Midgley (1989) suggested that a "developmental mismatch" between the emerging needs of adolescents and the nature of the affordances they experience at home and in school is an important factor in explaining motivational and achievement declines during these years. Just as adolescents are in need of noncomparative, autonomy-supportive, and caring contexts in which to develop their academic capabilities, these authors note that schools become more comparative, controlling, and anonymous in character. In reaction to this mismatch of needs and opportunities, young people's motivation and achievement are diminished (Eccles & Midgley, 1989). Similar processes have been described in relation to the family environment (Lord, Eccles, & McCarthy, 1994).

What is interesting and perhaps obvious from both a practical policy and a scientific perspective is that the reasons for changes in motivation and achievement during adolescence are as diverse as the student body and the social experiences that characterize their lives. As this brief theoretical overview shows, the reasons for negative changes in indices of academic functioning differ among different subgroups of individuals—subgroups that vary with respect to issues of physical maturation; focal identity issues related to gender, race, and class; developmental histories of academic failure or success; and social experiences in the home and school. Focusing on this diversity among subgroups of young people and drawing together different theoretical insights to do so seems important in the next generation of scholarship in this area. Systems approaches to human development, in which the concept of organization plays a central role, provide a set of research principles and analytic strategies by which researchers can directly examine the diverse patterns of academic functioning and pathways of educational development that characterize different subgroups of youth.

WHEN THE WHOLE IS GREATER THAN THE SUM OF THE PARTS

Although numerous theorists have articulated different aspects of holistic systems thinking as interpreted and practiced by scientists in the physical, life, and developmental sciences, at the heart of all systems thinking are four central foci (Capra, 1996). These foci include attention to (a) holistic patterns of organization among constituent phenomena, (b) dynamic processes, (c) the multilevel contexts in which phenomena exist, and (d) change and continuity in patterns of organization over time. In this section, we overview the cen-

tral concepts of systems thinking and highlight their relevance to studies of motivation to learn among early adolescents in school settings.

From Parts to Patterns

The foundational aspect of systems thinking is a fundamental perceptual, conceptual, and analytic shift from the parts of given phenomena to their holistic patterning within and across levels of analysis (a focus on multivariate, multilevel phenomena). The notion of holism does not imply that researchers need to attend to everything at once, because in nature complex systems are characterized by componentization and hierarchic organization in which specialized functions are elaborated into semi-autonomous subsystems that are buffered from, but interrelated with, other parts of the whole in which they are embedded (Ford & Ford, 1987).

For example, the motivational subsystem that includes cognitive and emotional processes that help individuals evaluate situations (e.g., expectancies), frame courses of action (intentions), and energize such actions (emotions) can be seen as distinct from but related to the ability subsystem that includes an individual's repertoire of mental abilities, knowledge, and strategies that allow intentions to be carried toward fruition in action (Ford, 1992; Snow, Corno, & Jackson, 1996). These subsystems, in turn, can be seen as distinct from but orchestrated by "higher-order" self-regulatory systems. Such higher order systems are the means by which individuals volitionally self-monitor and protect their intentions from competing demands or pressures as a means of ensuring "good enough" execution of them in favorable situations (Kuhl, 1984). Though buffered from one another and separated by special function, these subsystems nonetheless, from a systems perspective, act in conjunction with one another and the situational (system of) affordances and constraints to produce complex, observable behaviors such as learning or test performance (Ford, 1992; Snow, 1994). The entire set of psychological systems that motivate and enact achievement behaviors, in turn, can be seen as embedded within the broader context of the person's identity, such that doing well or failing academically takes on meaning only in relation to their broader sense of self in relation to that activity. The person, in turn, can be seen as embedded within particular social group affiliations, which give meaning to their scholastic identity (Steele, 1997). Understanding and attending to the multilevel patterns of processes that contribute to emergent behaviors such as school achievement is at the heart of a holistic approach.

Process Thinking

Systems thinking is also characterized by a fundamental perceptual, conceptual, and analytic shift from defining phenomena in static terms to defining them in terms of patterned, dynamic processes (or process dynamics). For instance, from such a perspective, motivation is viewed as fluxional patterns of cognitive and emotional processes (states) that ready individuals to act in relation to specific goals and contexts rather than as a set of stable drives or personality traits (Ford, 1992). Process thinking moves one from a focus on presumed static properties of individuals—their traits, sex, or race, toward a focus on dynamic processes such as situational states, sex role beliefs, ethnic identities, and so on (Bronfenbrenner, 1999).

A second, correlated notion of process thinking is that manifest phenomena such as achievement behaviors are seen as emerging from a pattern of underlying and overarching processes. Said another way, behavior reflects both the organization of and is the emergent property of a set of underlying and overarching intra-, inter-, and extrapersonal processes. In the example given above, one could say that performance on an achievement test emerges from a pattern of underlying psychological (e.g., test-related beliefs, feelings, strategies), social (e.g., social stigmas and stereotypes in a society), and instructional (e.g., cognitive task demands of tests) processes. Modeling the configurations of these multilevel processes in relation to specific outcomes becomes a basic goal from a holistic perspective.

Third, process thinking involves a consideration of not only the patterning but also the dynamic relations between aspects of a patterned phenomena. For instance, at the level of the personality, achievement behavior can be viewed not only as a function of a pattern of identity beliefs predisposing one to invest or divest from learning activities, but also with reference to the dynamic relations among different aspects of identity—relations characterized by consistency, coherence, or conflict (Pervin, 2000). For instance, individuals who are highly competent academically may still not apply themselves in the classroom if they view such behavior as in conflict with their reputation as being "cool" in the eyes of peers. In this instance, their in-class behavior is probabilistically predicted, at the psychological level of analysis, by the patterning of identity elements (e.g., competent student and cool) and the dynamic relation between them (e.g., conflict between being smart and being cool). We cannot say that their behavior was a function of one of these identity elements or the other in isolation; rather, it emerges from the interdependence between them.

The same is true of more task-related motivational processes. Oftentimes, perhaps always, it is in the patterning and dynamic relations among relevant goals, feelings, and beliefs of various kinds that behavior is forged. For instance, a person can be interested in learning something like calcu-

lus but may nonetheless elect not to take an AP math class if failure is anticipated. In this instance, the behavior, at the psychological level of analysis, is probabilistically predicted by a pattern of emotions (interest and fear), goals (approach mastery, avoid failure), and beliefs about attaining each goal (uncertain about ability to master calculus, certain one could avoid failure by not taking class). It is in the dynamic relations among these conflicting motivational processes that behavioral choices are forged. Is one's fear of failure and the desire to avoid it functionally more potent, though at odds with, the person's task interest and desire to master it, thereby leading to behavioral avoidance? In the management (or failure to do so) of conflicting desires and identities is perhaps where the motivational spice of life is found in most of us most of the time.

Moving from the intrapsychic to the interpersonal level of functioning, there is a fourth implication of process thinking at the level of the person-in-context. Specifically, process thinking suggests the possibility that behavior can be viewed as a function of the dynamic relations between the person and the situation—relations sometimes characterized by attunement or asynchrony, fit or mismatch (Eccles & Midgley, 1989). For instance, an individual may be motivated to take initiative on a project, but fail to engage with the project due to a lack of contextual affordances for autonomy. In this case, we might say the lack of attunement between the need for autonomy in the person and support for autonomy in the context "caused" the lack of behavioral engagement. Here, motivation itself begins to be seen as an emergent property of the relation between the person and the environment, rather than solely a property of the individual. Motivational theories in which implicit underlying needs and their corresponding overarching social affordances are central, in general, tend to view beliefs, emotions, and related behavior as "emergent" (Connell & Wellborn, 1991; Deci & Ryan, 1985).

Contextual Thinking

Another central hallmark of systems thinking is a shift from seeing phenomena as field independent to field interdependent (contextualism). In terms of motivation to learn, this suggests that motivational processes be viewed within the broader contexts of various intra-, inter-, and extrapersonal environments such as the self, social relationships, and activity settings such as the classroom. By definition, an accounting of these various contexts that transcend but include each other requires a cross-fertilization between theories of motivation and self, social relationships, and social institutions. Perhaps most importantly, contextual thinking requires one to develop rather sophisticated theories of the multilevel subcontexts of social environments such as schools in relation to the psychological functioning of individuals

who inhabit those settings. As we describe below, in middle level schools these multilevel subcontexts include tasks, classroom environments, and teachers, academic tracks, peer groups and the school as a whole organization, community characteristics, and so on (see Figure 12.1).

In sum, systems thinking is contextual thinking and draws attention to the embedded intra-, inter-, and extrapersonal contexts within which any phenomena exists. Individual motives exist within whole personalities; whole persons exist within sets of relationships with others; human relationships occur in specific activity settings such as the classroom; classrooms are situated within school organizations; schools exist within governance structures and communities; and so on up the ecological ladder. To address the complex, multilevel nature of social reality, researchers need to parsimoniously attend to work in the fields of education, sociology, public policy, history, and anthropology that deal with these larger frames of reference and social contexts that envelop the scholastic development of young people in schools (e.g., Jessor, 1993).

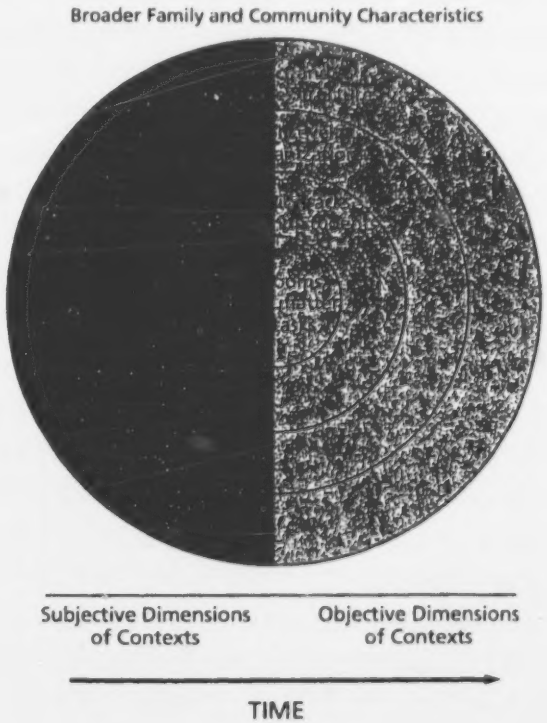

Figure 12.1. Descriptive embedded contexts model of school.

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Developmental Thinking

A final aspect of all systems thinking is its developmental orientation. Patterned phenomena exist in time and show change and continuity in organization over time. Indeed, one definition of development (and learning) refers to qualitative, enduring changes in the organization of functioning between people and their social contexts over time that tend to increase the structural and functional diversity of the individual and/or produce new steady states of behavioral functioning (D. Ford & Lerner, 1992).

One way to conceptualize such changes in the organization of individual functioning over time is in terms of a single line of development, for instance, physical or intellectual development, or a single line of identity development, for instance, scholastic identity. Motivational theorists are often concerned with continuities and discontinuities in perceived scholastic competence or valuing of education over time (see Eccles et al., 1998).

Another way to conceptualize development is in terms of intrapersonal patterns of organization of functioning across different domains. Masten and her colleagues (1995), for instance, examined correlational patterns across individuals in academic, social, and behavioral functioning during childhood and adolescence. They found that academic achievement shows a different relation with peer competence in childhood than it does in adolescence at the aggregate sample level. In childhood, academic achievement is strongly linked to peer competence—doing well in school and making friends go together, perhaps because school success brings social status. In adolescence, however, academic achievement and peer competence were uncorrelated. From a pattern-centered perspective, this set of findings is likely explained by the existence of two different subgroups in the sample, subgroups that would be explicitly examined and documented empirically. These subgroups probably include one consisting of adolescents who do well in school and make friends who presumably also do well in school, and another of adolescents who are failing in school but who are still good at making friends, presumably with those who are also failing in school (Berndt & Keefe, 1995). The combination of these two different subgroups of individuals, one in which high achievement goes with peer competence and one in which low achievement goes with peer competence, could result in a net relation of zero at the full sample level using correlations.

This example demonstrates how variable-centered analyses can provide important information at one level—the relation between achievement and peer competence changes over time—and yet at the same time obscure important insights at the subgroup level in terms of holistic patterns of functioning within subgroups. Using both types of analyses together can yield greater overall understanding of the organization of functioning generally

and within specific subgroups (e.g., Roeser, Eccles, & Sameroff, 1998). The same is true for longitudinal studies in which average, sample-level trends are the focus. Such analyses reveal important sample-level trends, but also tend to obscure the significant variation in patterns of change and continuity that exist among different subgroups (e.g., Roeser et al., 1999). Thus, pattern-centered techniques become useful adjuncts to variable-centered techniques, especially when one is interested in identifying and studying subgroups of individuals who display specific patterns of functioning across domains within time or within lines of development over time that diverge from statistically average trends.

Summary

Taking these four focal concepts as a whole, one could say that systems thinking is multivariate and multilevel, process oriented, contextual, and developmental in outlook. Manifest phenomena at any given level of analysis are viewed as "emerging" from a pattern of underlying and overarching processes that exist at different levels of analysis within and over time. In the next section, we attempt to use these core concepts of systems thinking to explicate three principles that may prove useful for guiding the next generation of scholarship on early adolescents' motivation to learn and achievement in school from a holistic vantage point.

FROM HOLISTIC CONCEPTS TO RESEARCH PRINCIPLES

From the core concepts of systems thinking that we have just reviewed, we have derived three specific principles that have guided our scholarship on early adolescents' motivation to learn in middle school. We have named these the "whole person principle," the "lifespace principle," and the "lifespan developmental principle." In the most general sense, these three principles are founded on the proposition that early adolescents' evolving sense of self and contemporary social experiences that bear on their behavior in school are the *fundamental psychological and social contexts* within which to consider the patterned, multivariate, multilevel *processes* that motivate patterns of engagement or disengagement, participation or nonparticipation, and achievement or failure in different subgroups of early adolescents in middle school. Additionally, these principles are founded on the systems idea that the quality of early adolescents' prior academic and social functioning in childhood, as well as their future educational and social aspirations for themselves in adulthood, form the *fundamental temporal contexts of the overall lifespan* within which to examine their motivation and

behavior in school during adolescence. By situating the study of adolescents' motivation to learn within these contexts of self, social environment, and time, we believe motivational research could be more fully aligned with systems principles and could address complex questions that require researchers to go beyond average statistical trends and variable relations. Below, we elaborate these principles in more detail and then provide one example of how we have tried to actualize them in our own research.

The Whole Person Principle

From a systems perspective on human behavior and development, the whole person is viewed as the organizing principle of the person's own experience. Human beings are "self-organizing" insofar as they actively anticipate and co-create their experiences in and their experiences of the world (Magnusson, 2000). In a psychological sense, the self is the inner context and active center from which whole persons organize their experience. It is from the self that individuals psychologically *extend* themselves in activity and social relationships, and it is the self that is *informed* by activities and people (Ryan, 1992). Thus, the self is the intrapsychological context in which to study the motivational processes by which individuals prepare for and then extend themselves in specific relationships and activities, and also the context within which to consider the functional significance of relationships and activities for an individual's behavior (Deci & Ryan, 1985). Individuals' senses of self are often intimately related to their biological characteristics (e.g., sex and stage of physical maturation) as well as their sociological statuses (race, social class, religion, etc.). Thus, these become important variables as well in the study of the intrapsychological context of motivational processes related to learning. In our view, there are two different ways of "situating" motivational processes within the broader context of the self that are relevant for researchers of motivation in school settings.

The Organization of Behavior in the Classroom

One way to think about the person holistically in motivational research is to focus on the pattern of the person's motivation and behavior in relation to a particular activity and its demands, for instance, learning in a classroom. This is the most common approach in motivational research on adolescence today. In this case, it is the proximal activity setting that provides the analytic frame for assessing holistic patterns of achievement behavior (Ford, 1992). The task here is to identify different subgroups of young people who show patterns of behavioral investment in or divestment from learning in the classroom, and then to relate such behavioral patterns to underlying sets of task-specific psychological processes that energize and

direct behavior in classroom and school settings. Such motivational processes include goals, capability-related beliefs, and emotions (Ford, 1992). The construct of a goal in particular, defined as an end that guides behavioral investment in a particular situation, provides a rather specific means of linking psychological and behavioral processes of individuals to the particular demand characteristics of learning activities in formal settings like the classroom (e.g., Ames, 1992; Dweck, 1996; Ford, 1992). Thus, goals become fundamental to defining situation-specific motivational patterns. An important consideration is how young people coordinate or manage conflict among multiple goals, feelings, and beliefs that may be activated in the setting of middle school or a particular classroom environment within the school (e.g., Pintrich, 2000). We have assumed that in any given sample of early adolescents, there exist a finite variety of goal-directed psychological-behavioral patterns of school investment (e.g., intrinsic or extrinsic forms of motivation to learn and achievement) and divestment (e.g., withdrawn or aggressive forms of alienation and failure). Patterns already identified in the educational and developmental literatures include those of the competitive student, the intrinsically motivated student, the student motivated by both extrinsic and intrinsic goals, the anxious-helpless student, and the aggressive student (see Dweck & Leggett, 1988; Pintrich, 2000; Roeser & Eccles, 2000).

The Organization of School Identities

A second way of thinking about the person as the central unit of analysis in motivational research in schools is to focus on the holistic patterning of individuals' sense of identity across multiple social roles that are salient in the context of school. These roles include, but transcend, the student role. Other salient dimensions of adolescents' school-based identities include that of peer group member, potential romantic partner, friend, athlete, artist, and so on. In this case, it is assumed that the salient identities of the person as a whole in school provide the analytic frame for assessing patterns of achievement behavior, and that such behavior emerges from both the patterning and dynamics among multiple aspects of a person's identity.

School-Relevant Social Identities

Several nonstudent roles interact dynamically to produce different patterns of achievement behavior in middle school—roles associated with physical attractiveness and gender, popularity and being cool, ethnicity and race, and so on. Conflict between roles may cause either academic disengagement or heightened stress, whereas consistency among roles should be related to engagement and well-being. For instance, that the student role is often defined in schools in the United States by competitive striving, self-assertion, and independence may make it more difficult for some ado-

lescents from cultural backgrounds in which different values such as cooperation and interdependence are emphasized to adopt such a role into their sense of self without reframing it somehow (Bernal, Saenz, & Knight, 1995; Olsen, 1997). In such instances, adolescents may experience significant stress or distress as they attempt to navigate the sociocultural borders between a home environment where cooperation is emphasized and a school culture where competition is emphasized (Davidson & Phelan, 1999). Similarly, some females may experience difficulty coordinating achievement and affiliation-related pursuits if the former leads to standing out and away from others and the latter leads toward cultural gender role fulfillment, intimacy, and interdependence (Maccoby, 1998).

As another example, some have conjectured that ethnic or racial identity (group membership roles) can also influence the ease with which certain adolescents identify with the student role and the institution of school. Ogbu (1978) suggests that what he calls "caste-like minorities," such as African- and Mexican-Americans, can experience difficulty adopting the student role and valuing school as a consequence of their group's historical devaluation by the White majority. He argues that such groups develop "oppositional identities" in which the behaviors and frame of reference of whites, which he believes include working hard for good grades at school, are rejected as a means of repudiating the dominant group, its oppression, and its institutions. In this case, we would expect ethnically identified individuals from these groups to resist the student role because of the conflicts it presents to their sense of ethnic loyalty and identification. Others have found evidence that early adolescent African Americans who are strongly ethnically identified are actually *more*, not less, likely to identify with school and the student role (Wong & Eccles, 1996). This work with African Americans from a broad range of socioeconomic backgrounds contrasts with that of Fordham and Ogbu (1986) with primarily poor African Americans in which evidence for oppositional identities in relation to school were found. Thus, how one's role as a member of a particular ethnic or racial group is associated with identification with the student role is no simple matter. It seems to depend on the intersection of race, class, and gender identities among different subgroups of individuals, among other things.

Mental Health

One implication that flows from this more identity-level focus on motivation to learn in school is that the maintenance and enhancement of one's overall emotional and social sense of self is dynamically related to one's ability to enact the student role. Concerns for physical, emotional, and social safety and well-being in school may in fact assume organismic priority over concerns for mastery of academic material among certain subgroups of adolescents, especially during the many physical and social

changes of early adolescence (e.g., Boekaerts & Niemivirta, 2000). Thus, in addition to considering the interrelations among multiple roles in different subgroups of youth, one can think about how motivation to learn and aspects of mental health (e.g., felt safety, social belonging, and well-being) are configured and related to one another in certain subgroups of individuals.

In sum, a second way to take a whole person perspective on motivational processes in school is to focus on how different patterns of achievement behavior among different subgroups of early adolescents emerge from how well the student role fits or does not fit with other valued aspects of their identity. We have assumed that in any given sample of early adolescents, there exist a finite variety of self patterns in which being a good student is seen as a central part of oneself (e.g., the all-American teenager, the nerd, the quiet, conscientious student) and others in which it is not (e.g., the social butterfly, the troubled adolescent, the iconoclast). The essence of the whole person principle is to focus on the one who is motivated or not in terms of the fullness of their in-school identities, whatever they may be, rather than simply in terms of the student role as defined by the institution.

The Lifespace Principle: Adding Contextual Features

As noted earlier, systems thinking is characterized by a shift from seeing phenomena as field independent to field interdependent. Just as goals and the overall configurations of psychological processes of which they are a part, and roles and the overall self of which they are a part, form the fundamental intrapersonal contexts within which to frame questions about motivation, so too do the tasks, people, and culture of classrooms and schools form fundamental inter- and extrapersonal contexts within which to situate these "lower level" psychological processes. From a pattern-centered perspective, the "lifespace principle" draws attention to the fact that variations in achievement behavior can be conceptualized as a function of various configurations of motivational and identity processes, subjective school experiences, and the objective tasks, people, and practices that inform subjective experiences. In short, the lifespace principle draws attention to the fact that the person-in-context becomes the focal unit of analysis (Lewin, 1936).

The research problem in making the person-in-context the focal unit of analysis is twofold. First, one must link subjective experiences of school to patterns of motivation and behavior among different subgroups of individuals. Second, one must attempt to identify the inter- and extra-personal features of the school environment that inform adolescents' subjective experiences of school. In order to address these twin challenges, we have found it necessary to develop a descriptive taxonomy of the multilevel,

embedded contexts that constitute the "middle school environment" from a third-person, non-subjective perspective. We have then attempted to marry this taxonomy with a prescriptive model in which different aspects of the school context as experienced in the first-person, subjective sense are related theoretically to motivational, mental health, and behavioral outcomes through their hypothetical "fit" or "mismatch" with the fundamental needs of early adolescents (Eccles & Midgley, 1989). We describe these interdependent heuristic models below.

Descriptive model

To organize our understanding of the tasks, people, and practices that form the subcontexts of school, we have conceived of middle school environments as a series of embedded, organized hierarchical contexts moving out from the student to the level of the communities in which the school is embedded. Figure 12.1 depicts these various levels, which include the curricula of different subject matters; the informal curriculum of the classroom, the person of the teacher and his or her pedagogy; the academic track and associated students in which specific classes are embedded; the culture of the school as a whole; the grade span of the institution (Grades K–8, 6–8, 7–9); school governance structures and sector (public or private school); and the families and communities that the school serves. Factors at each of these levels of the secondary school environment have been linked to aspects of adolescents' academic engagement and achievement (see Eccles & Roeser, 1999, and Lee et al., 1993, for full reviews).

Each level of the school environment, as perceived from the student position, can be characterized by both "objective," third-person and "subjective," first-person features. For instance, we have depicted a "right-hand, objective dimension" of these contexts to denote the explicit features of each level such as the curricular content of the different subject matters; the age, gender, and ethnic composition of the teaching staff; the social class backgrounds of students in different tracked classes; the size and resources of the school, district, state; and federal educational policies; and the socioeconomic characteristics of the community of the school (Talbert & McLaughlin, 1993, 1999). These right-hand dimensions can be assessed from an outsider, "etic" perspective.

Each of the right-hand dimensions is assumed to have a corresponding left-hand, subjective dimension. These dimensions are implicit and include things like the challenge level and meaningfulness of the tasks and the sequence and scope of the different subject matter curricula; the classroom norms and rules; the beliefs, values, and pedagogical outlook of the teachers; the motivational attitudes and mental health of students and peer groups in "high" and "low" track classes; the culture of the school in terms of norms, roles, and rules; the culture of the district; and the values of parents and the

community (e.g., Lee et al., 1993; Maehr & Midgley, 1991; Stodolsky & Grossman, 1995). The left-hand dimensions are not readily apparent to outsiders and are usually assessed via the perceptions of students, teachers, parents, and educational leaders who inhabit these settings on a daily basis (e.g., an "emic" perspective). It is these "left-hand" dimensions that have the most functional significance for inhabitants' behavior.

One important assumption from a psychological perspective is that considerable variation in perceptions of the environment may exist among inhabitants of the same setting. In addition, we assume that students who go to the same physical school do not necessarily experience the school environment in similar ways or even get exposed to the same kinds of subcontexts within the school. This assumption is based upon several different factors. First, young people can differ in the physical location and size of the organizational unit in which they go to school, and in their exposure to different teachers, peers, and kinds of curricula and teaching even within the same school. Some students in a school may be in portable trailers, which may or may not have adequate heat, whereas others may be in heated classrooms. Some may move into a "school within a school" that is located in a specific wing of the school, whereas others may have to traverse large areas and numbers of people as they transition from class to class. Furthermore, because differentiation practices intensify in public schools as youth move into the middle grades (Braddock & McPartland, 1992), students of different ability levels get exposed to different kinds of tasks, classmates, teachers, and teaching methods (Lee et al., 1993; Oakes et al., 1992). Status hierarchies based upon physical size, class, race and immigration status, involvement in school athletics or other activities, and peer groups generally are potent forces in secondary schools (Eckert, 1989; Epstein, 1983; Olsen, 1997). Thus, one's group memberships can likely have a profound impact on how one experiences school on a daily basis—whether one is in power or afraid, whether one is recognized or ignored, whether one feels a sense of belonging or alienation. Finally, different adolescents arrive at school with different educational histories and placements, and such experiences can shape their perceptions of schooling in the contemporary moment. Attending to how students may differ in their school experiences requires attention to both the "objective" and "subjective" dimensions of their contemporary experience, as well as their educational histories. Some factors such as track placement and classroom composition can be assessed from an etic perspective; others such as perceived treatment by teachers or curricular meaningfulness can only be assessed via first-person, emic reports.

Prescriptive model

We have found it useful in our own work to integrate this heuristic model of the tasks, people, and practices of school with a theory that prescribes how these various features of the environment will, theoretically, through early adolescents' subjective experience of them, affect their motivation and consequent patterns of behavior investment or divestment, participation or nonparticipation, achievement or failure in school. Rather than viewing young people as passive recipients of "educational treatments," motivational theories assume that adolescents are actively making meaning of the environment and having their self and school-related beliefs and feelings influenced by the meaning they derive there. These beliefs and feelings, in turn, are thought to "motivate" in-school behavior. In this sense, motivational theories stress that individuals are, in part, organizing their own development.

In one approach that has guided our work, Eccles and Midgley (1989) hypothesized that early adolescents have certain developmental needs. Specifically, they suggested that early adolescents want to feel that they are competent at various activities, and that they are especially sensitive to instances where their incompetence, relative to peers, is highlighted. In addition, they suggested that puberty and cognitive development herald new desires for autonomy; early adolescents want to exercise some choice and control over aspects of their activities. Finally, physical, cognitive, and emotional development in early adolescence is thought to lead to a need for developing intimate friendships with peers who are experiencing similar changes and to mentor-like relationships with nonparental adults who can guide youth as they move through the normative process of emotional individuation from parents.

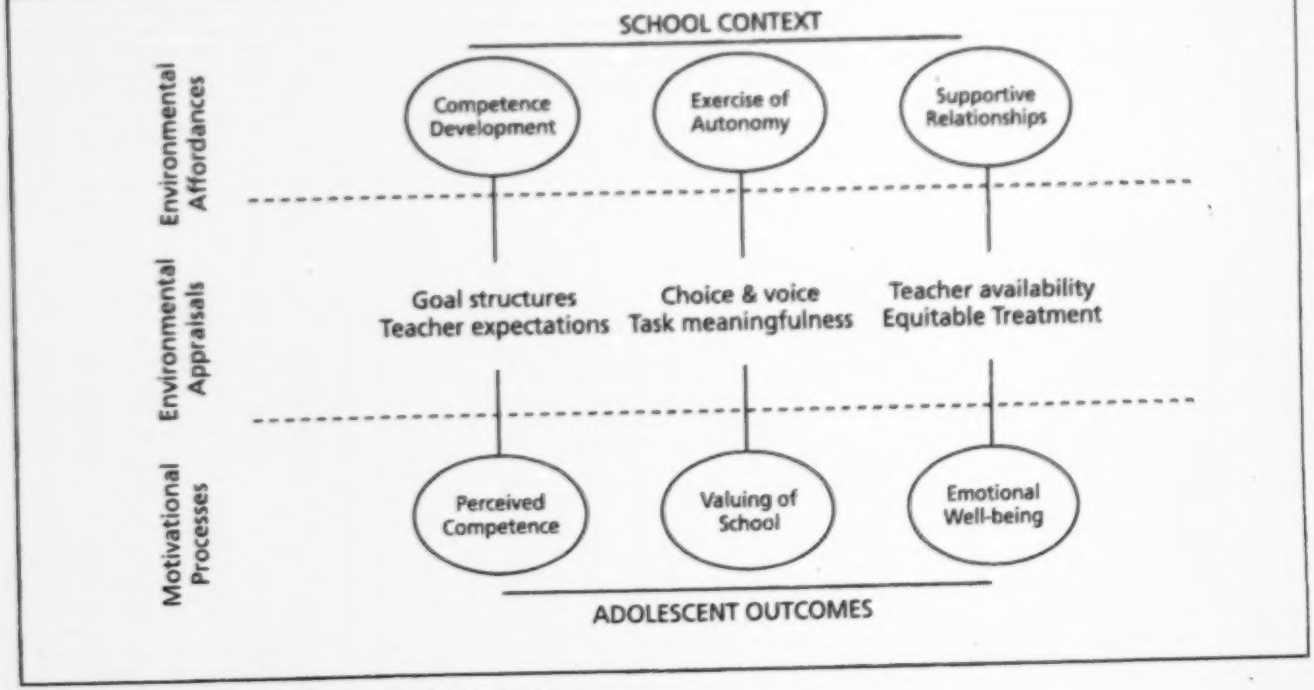
Logically, Eccles and Midgley (1989) then concluded that young people attend to the specific environmental affordances in the home, at school, or in any environment that either provide opportunities for them to fulfill these stage-specific needs, or that tend to frustrate such need fulfillment (see also Lazarus, 1991). In relation to school, Eccles and Midgley (1989) hypothesized that potentially fulfilling afforances would include (a) a relatively noncomparative, noncompetitive but challenging learning environment for developing emerging competencies; (b) opportunities for decision making in the classroom and for connecting what is being learned with personal interests and experiences during this age of identity exploration; (c) extended contact with classmates during a time when young people are trying to find their social niche; and (d) extended contact with and respectful support from teachers during a time when adolescents are striving for emotional autonomy from parents and therefore have a need for nonparental role models. Eccles and colleagues (1993) have shown that junior high school settings that provide such affordances do seem to posi-

tively influence early adolescents' motivation to learn and consequently, their achievement behavior. Such a situation is depicted graphically in Figure 12.2. On the other hand, socially comparative practices in school, lack of meaningful work or opportunities for choice or personal expression, and unsupportive relationships have been related to the opposite outcomes—low perceived academic competence, poor valuing of school, poor mental health, and, as a consequence, poor achievement and in-school behavior (Eccles et al., 1993; Roeser et al., 1998). Assessing the dynamic relation between developmental needs and school contextual affordances, *as perceived by adolescents' themselves*, provides a parsimonious and prescriptive way to link various objective features of the school environment to patterns of motivation and behavior at the individual level.

In sum, the "lifespace principle" draws attention to the fact that variations in achievement behavior can be conceptualized not only as a function of individual differences in motivational processes and the various intrapsychological contexts of which they form a part (e.g., the self), but also as a function of the dynamic relation between individual's needs and the inter- and extrapersonal contexts that characterize their lives. Here, the person functioning in context becomes the focal unit of analysis; and behavior is seen as emerging from how well environmental opportunities "fit" or are "mismatched" with salient developmental needs of the individual. Coordinating both etic and emic perspectives on specific features of the school environment and their implicit "fit" or "mismatch" with the salient developmental needs of individuals becomes the twofold task of assessing the lifespace among subgroups of individuals—individuals who may be afforded differential opportunities in a specific context, and who may also experience opportunities differentially based on their social group memberships, educational history, and so on.

The Lifespan Principle: Adding Time

A third principle we have found useful in instantiating systems concept in our work is what we have termed "the lifespan principle." The lifespan principle is simply the notion that development during any given period is influenced by the developmental periods directly preceding and succeeding it (Lerner, 1987). Adolescents' motivation to learn in school, for example, reflects a developmental process that is more or less continuous from childhood, and that stretches out toward adulthood roles and statuses. In terms of the past, behavior at any given moment reflects not only the immediate configuration of person-by-context interactions and transactions, but also the entire history of such interactions and transactions in the developmental past that are relevant to present functioning (Lewin,



355 Figure 12.2. Prescriptive motivational model of school context.

1936; Sameroff, 1983). The past history of an individual's academic performance, for example, "appears" in the present moment in terms of the person's academic motivation, knowledge, and abilities that are relevant to contemporaneous academic tasks and demands. In a very real way, the past is present in that it conditions how individuals approach or avoid new situations that are similar to those encountered in the past (Ford, 1992). Thus, individuals' history of academic performance and their educational placements (e.g., special education or gifted and talented programs) represent the developmental foundations that probabilistically forecast their motivation to learn during adolescence. It appears, for instance, that the evidence for declining motivation to learn among early adolescents is a reflection of at least two subgroups: those with long-term educational difficulties traced to the middle childhood years (Cairns et al., 1989; Roeser et al., 1999), and those who experience more proximal difficulties with the transition to junior high or middle school in early adolescence (Eccles et al., 1993; Simmons & Blyth, 1987).

From a motivational perspective in which anticipatory processes that ready individuals to act (or not act) are the focus, it is important to note that not only past encounters in childhood but also anticipated future ends in adulthood can influence present functioning (e.g., Markus & Nurius, 1986). This is especially true during adolescence, when one of the fundamental life tasks confronting adolescents is the linking of their past with a viable future (Erikson, 1968). Thus, another aspect to the lifespan principle is the idea that in studying motivation to learn among adolescents, we must not only account for present functioning and its link to individuals' educational histories, we must also account for where different individuals feel they are going educationally and occupationally. Perceptions of future opportunities and hoped for and feared selves all become important motivators of present functioning. Hopes and fears can "pull" present functioning in certain desired directions as much as past experiences can "push" behavior toward certain habitual, probabilistic ends. Currently, the integration of multiple time periods using longitudinal data, and multiple time perspectives using assessments of various short- and long-term goals in studies of adolescents' motivation, are not widespread.

In the next section, we endeavor to show how these three principles, the whole person, lifespace, and lifespan principles, have guided our own thinking about how to study motivational processes and schooling during adolescence. Through the presentation of one empirical example from our own research, we describe how we have tried to match our theoretical appreciation for the notion of organization within the person and between the person and the school context with data analytic techniques in which the pattern is the main unit of analysis.

AN EMPIRICAL ILLUSTRATION OF THE WHOLE PERSON, LIFESPACE, AND LIFESPAN PRINCIPLES

Recently, we completed a study using pattern-centered analyses in which we examined the organization of school identities and their linkages to school experiences among different subgroups of early adolescents (Roeser, Eccles, & Sameroff, 1998, 2000). This study is briefly described here as a means of illustrating how we have instantiated the "whole person," "lifespan," and "lifespace" principles described earlier in our own research. The goals of this study were to (a) describe subgroups of early adolescents who showed different patterns of academic motivation and social-emotional functioning; (b) link such patterns to consequential developmental outcomes that included but extended beyond the academic domain; (c) investigate the overarching organizational, instructional, and interpersonal processes that might explain these different patterns of functioning using stage-environment fit theory (Eccles & Midgley, 1989); and (d) examine how patterns of functioning in middle school among the different subgroups were related to subsequent educational attainments at the end of high school.

We began this study pragmatically. We wondered if we could identify subgroups of early adolescents who were characterized by patterns of functioning not adequately captured in aggregate-level trends that were well described in the literature: declining motivation and achievement and increased mental health problems. Did the same young people who experienced success or difficulty in one domain (the academic or the social-emotional) necessarily experience success or difficulty in the other? Synthesizing disparate bodies of research (see Eccles et al., 1996; Roeser et al., 1998, 1999), we assumed we could identify not only a "high-risk" group of youth who showed co-occurring academic and social-emotional problems, but also a group who were sad or angry but who nonetheless remained engaged in school and stayed away from bad peer influences—a group of young people we would call "academically resilient" because in the face of emotional adversity, they nonetheless stayed on track academically. Conversely, we assumed we could identify a group of adolescents who seemed free of emotional distress but who nonetheless felt psychologically disengaged from learning in school, perhaps due to the nature of their middle school environment (e.g., Eccles et al., 1993). Finally, contrary to prevailing stereotypes about adolescents in the wider culture, we assumed we would find that a majority of youth were characterized by multiple assets—positive motivation, good grades, no mental health problems, and avoidance of peers involved in problem behaviors (e.g., Dryfoos, 1998).

Theoretically, our interest was in exploring how these hypothesized patterns of school and social-emotional functioning among different sub-

groups of early adolescents might be explained, in part, by their pattern of experiences in school. Specifically, we were interested to see if youth with more positive academic motivation and behavior, mental health, or both reported the kinds of school experiences hypothesized to "fit" with their developmental needs. In contrast, we wondered if those who were disengaged academically, social-emotionally, or both might report more developmentally inappropriate school experiences. To test these ideas, we conducted a longitudinal investigation with a sample that included approximately 1,000 primarily African American and white families with an adolescent child these families began the study when the adolescent was in seventh grade and remained in the study for the next six years (J. Eccles & A.J. Sameroff are the study's principal investigators). Adolescents attended one of 23 middle schools in a large, county-wide school district. A portion of the research done within the context of this larger study is described here in four phases for purposes of illustrating some ways of conducting pattern-centered research.

Phase I: Identifying Subgroups

Person-centered, cluster analytic techniques were used to define subgroups of early adolescents. Such techniques assess the interdependence among variables within persons and thereby classify persons into relatively homogenous groups based upon their similarity across a series of measures (Magnusson & Bergmann, 1988). In this case, we clustered adolescents into subgroups based upon their pattern of self-reported academic competence, academic value, and emotional distress during the beginning of Grade 7. The four clusters that emerged and were retained for analyses are depicted in the graph portion of Figure 12.3. The clusters were named "multiple assets," "poor school value," "poor mental health," and "multiple problems," respectively. These empirically derived clusters matched our intuitions about plausible subgroups, and, as expected, the largest group was characterized by multiple assets (41% of the sample).

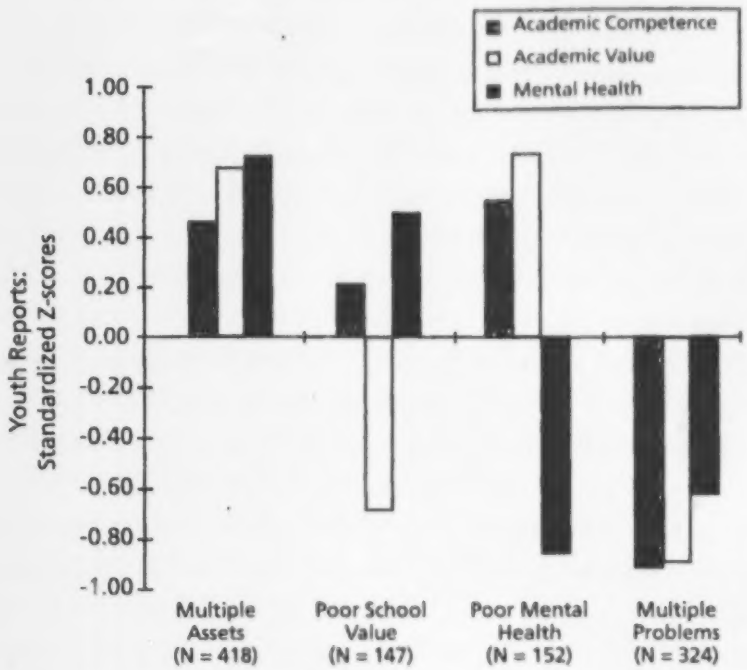


Figure 12.3. Patterns of school and social-emotional functioning at 7th grade: Teacher, parent, and youth reports of academic and social behavior.

Table 12.1. Adolescent Functioning

	Multiple Assets (N = 418)	*Poor School Value (N = 147)*	*Poor Mental Health (N = 152)*	*Multiple Problems (N = 324)*
Teachers: GPA 7th Grade	0.21[a]	0.21[a]	0.10[a]	–0.39[b]
Parent: Percent failing a class	15%[a]	20%[a]	20%[a]	39%[b]
Parent: Youth distress	–.027[a]	–0.06[b]	0.02[b]	0.35[c]
Youth: Anti-social friends	–0.27[a]	0.00[b]	0.00[b]	0.27[c]

All group comparisons showed significant F-values. Student Newman-Keuls post-hoc comparisons were used to test the nature of specific between-group differences. Different superscripts for a particular variable across clusters indicates a significant mean difference at the $p \leq .05$ level. All of these variables in the table, with the exception of parent reports of whether or not their adolescent failed or did very poorly in a class during the last two years, are expressed in standardized, z-score units.

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Phase II: Subgroup Differences in Multiple Behaviors

In the next phase, we examined group differences in variables not used to create the subgroups. These included teacher-reported grades, parent reports of their child's academic failure and mental health, and youth self-reports of engaging in problem behaviors in school (cheating, getting in fights, etc.) and associating with peers who engage in such problem behaviors. In the table portion at the bottom of Figure 12.3, one can see how the groups differed across these varied consequential behaviors.

Several findings are noteworthy. First, academically, we found that it was only the "multiple problems" youth who are different—they got poorer grades and were more likely to have done poorly in or failed a class in school compared to the youth in the other three subgroups. These three groups, in turn, did not differ from one another in terms of their achievement behavior. However, the middle two groups were not "risk free"—their parents reported poorer emotional functioning than parents of the multiple assets youth; and these adolescents themselves reported average levels of hanging out with friends who engaged in minor delinquent acts such as cheating in school, stealing something worth less than $50, trying drugs, and so on. The multiple assets youth, in contrast, did well in school, avoided peers who engaged in these problem behaviors, and were seen as more emotionally healthy by their parents compared to youth in each of the other subgroups.

A second form of cluster description undertaken at this phase concerned the demographic characteristics of the clusters. Two group differences were noteworthy. First, White boys who came from relatively well-educated and wealthy families were overrepresented in the poor school value group. Second, white girls and African American boys were overrepresented in the poor mental health group. These findings are discussed briefly below (see Roeser et al., 1998, 2000, for further discussion).

Phase III: Lifespace Analysis

In the next stage of this study, we made the assumption that youth would show stability in their pattern of school and social-emotional functioning throughout middle school. The graph portion at the top of Figure 12.4 plots the means of youths' Grade 8 self-reported academic competence, academic value, and mental health by Grade 7 subgroup. As one can see, the assumption of continuity was borne out insofar as the between-group differences are still significant on these measures, albeit attenuated (see Roeser et al., 1998).

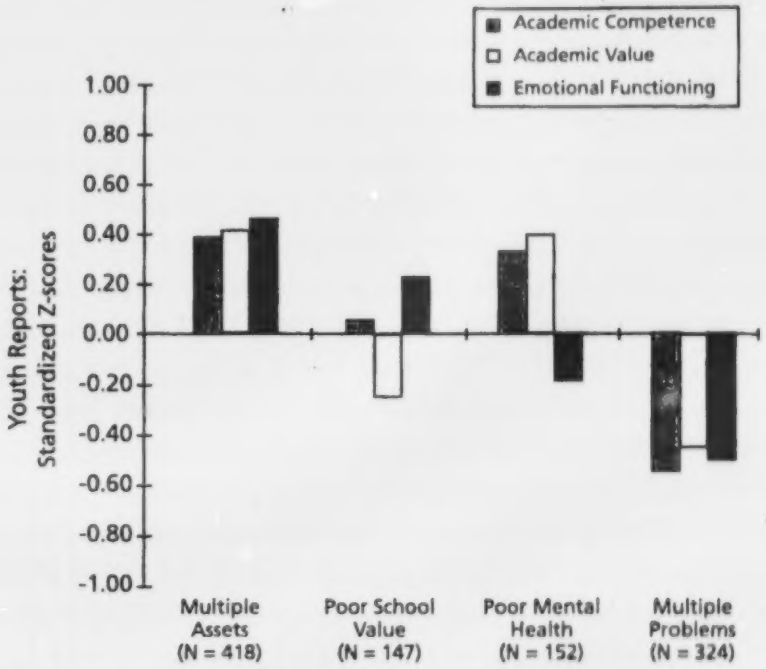

Figure 12.4. Patterns of school and social-emotional functioning at 8th grade: Youth reports of school experiences.

Table 12.2. Subjective School Percepions

	Multiple Assets (N = 418)	*Poor School Value (N = 147)*	*Poor Mental Health (N = 152)*	*Multiple Problems (N = 324)*
School ability goal structure	–0.24[a]	0.07[bc]	–0.05[ab]	0.29[c]
School mastery goal structure	0.18[a]	–0.21[b]	0.17[a]	–0.18[b]
Positive teacher regard	0.24[a]	0.12[a]	0.02[a]	–0.35[b]
Meaningful cuuricula	0.20[a]	–0.23[b]	0.25[a]	–0.24[b]
Classroom autonomy provisions	0.14[a]	–0.16[b]	0.20[a]	–0.18[b]
Teacher emotional support	0.19[a]	–0.30[b]	0.17[a]	–0.18[b]
Inequitable treatment by race	–0.19[a]	–0.17[a]	0.03[b]	0.25[b]
Inequitable treatment by sex	–0.23[a]	–0.14[a]	0.18[b]	0.25[b]

All group comparisons showed significant F-values. Student Newman-Keuls post-hoc comparisons were used to test the nature of specific between-group differences. Different *superscripts for a particular variable across clusters indicates a significant mean difference at the* $p \leq .05$ *level. All of these variables in the table are expressed in standardized, z-score units.*

Next, we compared the subgroups on a series of measures that assessed their school environments—both subjectively and objectively. The first series of measures was designed to tap developmentally appropriate and regressive school experiences—measures described in Figure 12.2 that included a socially comparative (school ability goal structure) or mastery-oriented (school mastery goal structure) school culture, teacher expectations, meaningful curricula and opportunities for voice and choice in the classroom, emotionally available teachers, and (in)equitable treatment of the sexes and those from different racial groups. Results assessing group differences in students' subjective school perceptions are presented in the table portion at the bottom of Figure 12.4.

The results provided a rather differentiated, theoretically predicted portrait of how certain school experiences are linked to certain patterns of motivation, mental health, and behavior among different subgroups of adolescents. First, note that the multiple assets group reported a consistent pattern of developmentally appropriate school affordances, as did the youth in the poor mental health group for the most part. These results are consistent with the notion that developmentally appropriate environments are associated with positive educational outcomes in youth, even among youth perhaps who are otherwise struggling with emotional problems. In contrast, the multiple problems youth reported the most developmentally regressive school experiences. Based upon parent reports of their child's course-taking patterns, we also found that disproportionate numbers of these multiple problem youth were in what could be considered low track or remedial classes in school. These findings are in keeping with the idea that school practices that are mismatched with adolescents' needs are associated with academic and emotional difficulties, and that low track classrooms are places where the most developmentally regressive pedagogical practices are likely to occur (Oakes et al., 1992). Of course, with this data and a pattern-centered approach, we can clearly see configurations of these theoretically consistent factors, but cannot make claims about the causal direction of influence between the motivational, behavioral, and contextual variables that comprise these configurations.

Perhaps of most interest are the factors that differentiate the two middle groups from the others. The poor school value youth are differentiated by precisely those variables we would most expect to affect poor valuing of school—less of an emphasis on task mastery, less meaningful curricula, fewer provisions for autonomy, and less emotionally available teachers. At the same time, these young people say their teachers think they are good students, they do fine academically, and they do not feel mistreated by teachers. In effect, they seem bored by the work, controlled by the teacher, and perhaps a little uncared for emotionally. The only factor that differentiated the poor mental health youth was perceived inequitable treatment

by teachers predicated on sex, and to a lesser degree, race. It is interesting that white girls and African American boys were overrepresented in this group. They both felt that teachers were less likely to call on them, more likely to grade them harder, and less likely to think they are smart. We are currently pursuing a better understanding of what might be behind this finding in an interview study (Roeser, Galloway, Watson, Casey-Cannon, & Keller, 2001).

Finally, we compared the subgroups of objective measures of schools derived from data gathered from school officials and published government reports—the percentage of students on reduced or free lunch, the racial composition of the student body, the percentage of Grade 8 students taking algebra, and the aggregate standardized test scores and grade point averages of the student body in the school. Generally, we found no differences between groups on the objective school measures. We did find that those in the poor school valuing group (of whom white, relatively wealthy boys were overrepresented) tended to go to schools with higher aggregate mathematics and reading test scores, a higher proportion of white students, and a lower proportion of students on free lunch compared to those in the multiple problems group. These latter youth tended to be in slightly poorer, lower achieving schools, though the differences were not great. Taken as a whole, demographic factors seemed to most differentiate adolescents who were members of the poor school valuing group—they appear to be average achieving, academically disengaged white boys attending middle class schools. Socioeconomic variables did not seem to be a defining feature in any of the three other subgroups, whereas psychological and social contextual process measures did.

Phase IV: Lifespan Analysis

In the last analysis, we examined how subgroup patterns in Grade 7 were related to educational outcomes for the adolescents for whom we had data six years later (Roeser et al., 2000, 2001). At this point in time, youth who were college bound and on track educationally would have graduated from high school and been in their first year in college. What we found is perhaps not surprising—the multiple assets youth were overrepresented in the category of those who graduated from high school and went on to college, and underrepresented among those who graduated from high school but did not go on to college. On the other hand, the multiple problems were more likely to have dropped out of high school or completed high school and not gone on to college, and less likely to have graduated and gone on to college than predicted by chance. From a pattern-centered perspective, what is interesting in this analysis is the fact that six students in the multiple

assets group did in fact drop out, and 93 students in the multiple problems group did go on to college. Exploring these "off-trajectory" youth based on their earlier patterns is another interesting use of pattern-centered data analytic techniques.

Implications

This study illustrates some of the insights that can be gained when using pattern-centered data analytic techniques to address motivational questions. First, the study began with an interesting practical question that necessarily focused on subgroups: Do youth necessarily show consistent success or difficulty in the academic and social-emotional domains of functioning? We chose indicators of motivation and mental health to form the subgroups, and then assessed a series of contextual factors derived from stage-environment fit theory (Eccles & Midgley, 1989) that might be useful in differentiating subgroups and thereby providing some explanation for why youth were characterized by different patterns of promise or problem. We assumed those who reported experiences that better "fit" adolescent needs, based on theory, would show more optimal patterns of functioning, whereas those who reported experiences mismatched with needs would show worse patterns of functioning.[1]

Second, this study presented one way of deriving subgroups. Specifically, they were based on youth self-reports of motivation and mental health that were cluster analyzed. Emergent subgroups were then compared on teacher, parent, and youth reports of various behaviors. Using multiple informants, when possible, is a powerful way to differentiate different subgroups of individuals in practically and theoretically meaningful ways. A key element in this latter illustration was showing how patterns of motivation and mental health are not only associated with achievement, but also school problem behavior and peer affiliations during adolescence. Developmental assets and risks "cluster" during this period (Dryfoos, 1990), and addressing this in motivational research by going beyond the academic domain is important. For instance, we suggest that the low track placement of the multiple problems youth likely exposes them differentially to peers who are similarly disengaged from school, potentiating perhaps their own misconduct, failure, and alienation from school (Dishion, Patterson, Stoolmiller, & Skinner, 1991).

Third, and perhaps most importantly, we showed how indicators of the lifespace of school, derived from both first-person, subjective reports and third-person sources, could be combined with different patterns of motivation, mental health, and behavior in theoretically meaningful ways. Indeed, what we created is what Lewin (1936) meant by a "lifespace config-

uration"—a pattern of motivational processes and perceptions of the environment that energize and give direction to behavior in that environment. As Lewin noted and our results showed, understanding the subjectively experienced environment is essential for understanding the functional significance of that environment for an individual's behavior. The "objective" measures of the school that we examined were much less differentiating of the subgroups than were the subjective measures.

Finally, the results of this study highlight the utility of pattern-centered techniques for illuminating the diversity of patterns and pathways that can eventuate in unique or common developmental outcomes. In the first instance, we found three patterns and pathways linked to a common set of outcomes: positive achievement, high school graduation, and college enrollment. One such pattern among middle school students was characterized by positive motivation and mental health, another was characterized by positive academic motivation despite poor mental health, and still another was characterized by "good enough" school functioning (e.g., poor school valuing group). These results highlight the diversity of ways of attaining positive educational outcomes among different youth. On the other hand, we found one pathway to academic problems and dropping out—the multiple problems pattern. Consistent with other studies, these were the youth who showed externalizing problems, grade retention, and academic failure much earlier in elementary school (Cairns et al., 1989). Again, these results highlight the need for a lifespan approach in the study of motivation during adolescence.

CONCLUSIONS

Although it is perhaps true that the wholeness of life has from of old been made manifest in its parts, it may also be true that everything in the universe follows certain patterns and processes. Although the future is the hardest to predict, it appears that it may once again be time for educational and developmental psychologists to take a holistic approach to the mystery that is a human life in progress. Seeing holistically and appreciating the phenomenal world in its process-oriented and patterned splendor is, if nothing else, the fast-approaching scientific future.

The use of pattern-centered techniques are the analytic analogue to the theoretical concept of organization that permeated each section of this chapter. Such techniques, whether based on mathematical algorithms, multi-informant nominations, or some other method, have several underutilized advantages. First, they take the researcher beyond statistically average trends in data analysis and focus on (hopefully) substantive or theoretically interesting subgroups whose functioning may not be repre-

sented by average trends at all. Second, they allow for an examination of configurations of multiple "predictor" and "outcome" variables at the same time. This seems to bode well for studying the kinds of clustering of developmental outcomes that occur during adolescence. Implicit in pattern-centered approaches is a direct examination of higher-order interactions among many variables. Third, and perhaps most importantly, such techniques make the person as the focal unit of analysis and are consistent with many of the tenets of modern developmental theory in which the person is seen as the organizing principle of their own development (Magnusson, 2000). Pattern-centered techniques allow for direct examinations of patterns and pathways of functioning in ways that may, given the focus on holistic patterning of variables within subgroups, speak to the "case-like" reasoning of practitioners in educational and clinical settings. Such techniques, when married with the assumptions of contemporary systems thinking, provide a powerful complement to existing research on academic motivation and schooling during adolescence, and also a rich set of possibilities for future research on the diversity of motives, selfways, educational pathways, and in-school experiences that characterize different subgroups of adolescents in U.S. schools today.

NOTES

1. We have already examined, using variable-centered analytic techniques, the question of causal influence as best we could with correlational, longitudinal data to see if perceptions of context were accounted for primarily by the state of the individual. Time and again we found that after controlling for sociodemographic factors and prior measures of motivation, mental health, and achievement, perceptions of school still contributed additional variance to outcomes measures of motivation, mental health, and achievement (Roeser, 1996; Roeser et al., 1998, 2000). Thus, though such configurations may simply reflect the "state" of the individual youth, we believe that the specific patterns in the data and their consistency with theory suggest something more substantive is reflected in with these findings.

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